

10/514 196

DT15 Rec'd PCT/PTO 12 NOV 2004

ART 34 AMDT

- 41 -

CLAIMS

1. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and wherein the chromium is partly replaced with at least one element selected from Zr, Hf, V, Ta, Mo, W and Nb, the total replacement ratio of Zr, Hf, V and Nb is one mass percent or less, the replacement ratio of Ta is two mass percent or less, and the total replacement ratio of Mo and W is 10 mass percent or less.

2. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and wherein the total replacement ratio of a plurality of the elements represented by a formula $(Zr+Hf+V+Nb) \times 10 + Ta \times 5 + (Mo+W)$ is 10 mass percent or less, wherein the name of elements Zr, Hf, Ta, Mo, W and Nb represents the replacement ratio of each element, the elements partly replacing the chromium.

3. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and wherein the aluminum is partly replaced with 1.2 mass percent or less of Ti.

4. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and

wherein the nickel is partly replaced with 5 mass percent or less of Fe.

5. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and wherein the Ni-Cr alloy further comprises:

0.1 mass percent or less of C;

0.05 mass percent or less of Mn;

0.005 mass percent or less of P;

0.005 mass percent or less of O;

0.003 mass percent or less of S;

0.02 mass percent or less of Cu; and

0.05 mass percent or less of Si; as the impurities and the additional trace elements,

the total content of P, O, and S is 0.01 mass percent or less, and the total content of Mn, Cu, and Si is 0.05 mass percent or less.

6. (Amended) A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr, from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional trace elements and having a Rockwell C hardness of 52 or more, and wherein the Ni-Cr alloy further comprises:

0.025 mass percent or less of Mg;

0.02 mass percent or less of Ca;

0.03 mass percent or less of B; and

0.02 mass percent or less of rare earth elements including Y; as the impurities and the additional trace elements, and

the total content of Mg, Ca, and B is 0.03 mass percent or less (but when the total content of Mg, Ca, and B is 0.015 mass percent or more, the total content of P, O, and S is 0.003 mass percent or less and the total content of Mn, Cu and Si is 0.03 mass percent or less).

5

7. (Amended) The cutter according to any one of claims 1 to 6, characterized in that the Ni-Cr alloy comprises a texture wherein three phases including an α phase that is a Cr-rich phase, a γ phase that is a Ni-rich phase, and a γ' phase that is an intermetallic compound phase composed of Ni_3Al as the basic composition are mixed.

10

8. (Amended) The cutter according to any one of claims 1 to 9, wherein the Ni-Cr alloy has an average grain size of 1 mm or less.

15

9. The cutter according to any one of claims 1 to 8, characterized in that the Ni-Cr alloy comprises a texture wherein three phases including an α phase that is a Cr-rich phase, a γ phase that is a Ni-rich phase, and a γ' phase that is an intermetallic compound phase composed of Ni_3Al as the basic composition are mixed.

20

10. The cutter according to any one of claims 1 to 9, wherein the Ni-Cr alloy has an average grain size of 1 mm or less.